Exhibit 300: Capital Asset Plan and Business Case Summary

Part I: Summary Information And Justification (All Capital Assets)

Section A: Overview (All Capital Assets)

1. Date of Submission:	4/10/2009
2. Agency:	Department of Energy
3. Bureau:	National Nuclear Security Administration
4. Name of this Capital Asset:	NNSA ASC LLNL Sequoia Platform
5. Unique Project (Investment) Identifier: (For IT investment only, see section 53. For all other, use agency ID system.)	019-05-01-11-01-1051-00
6. What kind of investment will this be in FY 2010? (Please NOTE: Investments moving to O&M in FY 2010, with Planning/Acquisition activities prior to FY 2010 should not select O&M. These investments should indicate their current status.)	Full Acquisition
7. What was the first budget year this investment was submitted to OMB?	FY2009

8. Provide a brief summary and justification for this investment, including a brief description of how this closes in part or in whole an identified agency performance gap:

To respond to the evolving 21st century global security threats, NNSA will bring our science, technology and engineering enterprise to bear on solving large, urgent national security challenges. NNSA future mission is one encompassing the full spectrum of national security interests. The broad range of research and development activities at the NNSA laboratories includes high-performance computing to ensure that the nation is equipped to deal with technological surprises and anticipate new national security threats.

9. Did the Agency's Executive/Investment Committee approve this request?	Yes
a. If "yes," what was the date of this approval?	8/21/2008
10. Did the Project Manager review this Exhibit?	Yes
11. Contact information of Program/Project Manager?	
Name	Brinker, Samuel D; and Lee, Sander
Phone Number	925-422-0710 / 202-586-2698
Email	samuel.brinker@oak.doe.gov / sander.lee@nnsa.doe.gov
a. What is the current FAC-P/PM (for civilian agencies) or DAWIA (for defense agencies) certification level of the program/project manager?	Senior/Expert/DAWIA-Level 3
b. When was the Program/Project Manager Assigned?	2/25/2009
c. What date did the Program/Project Manager receive the FAC-P/PM certification? If the certification has not been issued, what is the anticipated date for certification?	2/25/2009
12. Has the agency developed and/or promoted cost effective, energy-efficient and environmentally sustainable techniques or practices for this project?	Yes
a. Will this investment include electronic assets (including computers)?	Yes
b. Is this investment for new construction or major retrofit of a Federal building or facility? (answer applicable to non-IT assets only)	No
1. If "yes," is an ESPC or UESC being used to help fund this investment?	
2. If "yes," will this investment meet sustainable design principles?	
3. If "yes," is it designed to be 30% more energy efficient than relevant code?	

13. Does this investment directly support one of the PMA initiatives?	Yes
If "yes," check all that apply:	R and D Investment Criteria Expanded E-Government
a. Briefly and specifically describe for each selected how this asset directly supports the identified initiative(s)? (e.g. If E-Gov is selected, is it an approved shared service provider or the managing partner?)	The ASC program supports the Presidential Expanded E-Government initiative through Mission Area Support by enabling collaborations. The ASC HPCs enable scientists and engineers to perform R&D processing of scientific codes and calculations.
14. Does this investment support a program assessed using the Program Assessment Rating Tool (PART)? (For more information about the PART, visit www.whitehouse.gov/omb/part.)	Yes
a. If "yes," does this investment address a weakness found during a PART review?	No
b. If "yes," what is the name of the PARTed program?	10000076 - National Nuclear Security Administration: Advanced Simulation and Computing (ASC)
c. If "yes," what rating did the PART receive?	Effective
15. Is this investment for information technology?	Yes

If the answer to Question 15 is "Yes," complete questions 16-23 below. If the answer is "No," do not answer questions 16-23.

For information technology investments only:

16. What is the level of the IT Project? (per CIO Council PM Guidance)	Level 3
17. In addition to the answer in 11(a), what project management qualifications does the Project Manager have? (per CIO Council PM Guidance)	(1) Project manager has been validated as qualified for this investment
18. Is this investment or any project(s) within this investment identified as "high risk" on the Q4 - FY 2008 agency high risk report (per OMB Memorandum M-05-23)	No
19. Is this a financial management system?	No
a. If "yes," does this investment address a FFMIA compliance area?	
1. If "yes," which compliance area:	
2. If "no," what does it address?	

b. If "yes," please identify the system name(s) and system acronym(s) as reported in the most recent financial systems inventory update required by Circular A-11 section 52

20. What is the percentage breakout for the total FY2010 funding request for the following? (This should total 100%)

Hardware	98
Software	2
Services	0
Other	0
21. If this project produces information dissemination products for the public, are these products published to the Internet in conformance with OMB Memorandum 05-04 and included in your agency inventory, schedules and priorities?	N/A

22. Contact information of individual responsible for privacy related questions:

Name	Hagerty, Kevin T
Phone Number	202-586-5955
Title	Freedom of Information & Privacy Acts Officer
E-mail	kevin.hagerty@hq.doe.gov
23. Are the records produced by this investment appropriately scheduled with the National Archives and Records Administration's approval?	No

Question 24 must be answered by all Investments:

24. Does this investment directly support one of the GAO High Risk Areas? No

Section B: Summary of Spending (All Capital Assets)

1. Provide the total estimated life-cycle cost for this investment by completing the following table. All amounts represent budget authority in millions, and are rounded to three decimal places. Federal personnel costs should be included only in the row designated "Government FTE Cost," and should be excluded from the amounts shown for "Planning," "Full Acquisition," and "Operation/Maintenance." The "TOTAL" estimated annual cost of the investment is the sum of costs for "Planning," "Full Acquisition," and "Operation/Maintenance." For Federal buildings and facilities, life-cycle costs should include long term energy, environmental, decommissioning, and/or restoration costs. The costs associated with the entire life-cycle of the investment should be included in this report.

Table 1: SUMMARY OF SPENDING FOR PROJECT PHASES (REPORTED IN MILLIONS)
(Estimates for BY+1 and beyond are for planning purposes only and do not represent budget decisions)

	PY-1 and earlier	PY 2008	CY 2009	BY 2010	BY+1 2011	BY+2 2012	BY+3 2013	BY+4 and beyond	Total
Planning:	0	0	0	0	0	0	0	0	0
Acquisition:	0	0	54	18.779	42.5	101.883	0	0	217.162
Subtotal Planning & Acquisition:	0	0	54	18.779	42.5	101.883	0	0	217.162
Operations & Maintenance:	0	0	0	0	0	0	0	0	0
TOTAL:	0	0	54	18.779	42.5	101.883	0	0	217.162
Government FTE Costs should not be included in the amounts provided above.									
Government FTE Costs	0	0	0.031827	0.042436	0.042436	0.053045	0	0	0.169744
Number of FTE represented by Costs:	0	0	1	1	1	1	0	0	4

Note: For the multi-agency investments, this table should include all funding (both managing partner and partner agencies). Government FTE Costs should not be included as part of the TOTAL represented.

2. Will this project require the agency to hire additional FTE's? No

a. If "yes," How many and in what year?

3. If the summary of spending has changed from the FY2009 President's budget request, briefly explain those changes:

The CD 2/3 for this project was approved on January 12, 2009. The summary of spending reflects the performance baseline approved for the project.

Section C: Acquisition/Contract Strategy (All Capital Assets)

1. Complete the table for all (including all non-Federal) contracts and/or task orders currently in place or planned for this investment. Total Value should include all option years for each contract. Contracts and/or task orders completed do not need to be included.

Contracts/Task Orders Table: * Costs in millions

Contract or Task Order Number	Type of Contract/ Task Order (In accordance with FAR Part 16)	Has the contract been awarded (Y/N)	If so what is the date of the award? If not, what is the planned award date?	Start date of Contract/ Task Order	End date of Contract/ Task Order	Total Value of Contract/ Task Order ($M)	Is this an Interagency Acquisition? (Y/N)	Is it performance based? (Y/N)	Competitively awarded? (Y/N)	What, if any, alternative financing option is being used? (ESPC, UESC, EUL, N/A)	Is EVM in the contract? (Y/N)	Does the contract include the required security & privacy clauses? (Y/N)	Name of CO	CO Contact information (phone/email)	Contracting Officer FAC-C or DAWIA Certification Level (Level 1, 2, 3, N/A)	If N/A, has the agency determined the CO assigned has the competencies and skills necessary to support this acquisition? (Y/N)
	Firm Fixed Price M&O SubContract with milestone payments tied to specific deliverables and schedule dates; and performance on hardware acceptance tests with specific performance criteria.	Yes	1/12/2009	1/12/2009	9/30/2012	217.162	No	Yes	Yes	NA	No	Yes	Williams, Alice	925-422-0879 / alice.williams@oak.doe.gov	N/A	Yes

2. If earned value is not required or will not be a contract requirement for any of the contracts or task orders above, explain why:

3. Do the contracts ensure Section 508 compliance?	Yes
a. Explain why not or how this is being done?	ASC Sequoia will be Section 508 compliant. This will be a centralized computer system housed in a large computing facility. The entire building that will house the platform is ANSI A117.1.1998 compliant on which Section 508 is based. Users will access the system via network connections. Accessibility issues of those users will be the responsibility of their IT Department.
4. Is there an acquisition plan which reflects the requirements of FAR Subpart 7.1 and has been approved in accordance with agency requirements?	Yes
a. If "yes," what is the date?	2/24/2008
1. Is it Current?	Yes
b. If "no," will an acquisition plan be developed?	
1. If "no," briefly explain why:	

Section D: Performance Information (All Capital Assets)

In order to successfully address this area of the exhibit 300, performance goals must be provided for the agency and be linked to the annual performance plan. The investment must discuss the agency's mission and strategic goals, and performance measures (indicators) must be provided. These goals need to map to the gap in the agency's strategic goals and objectives this investment is designed to fill. They are the internal and external performance benefits this investment is expected to deliver to the agency (e.g., improve efficiency by 60 percent, increase citizen participation by 300 percent a year to achieve an overall citizen participation rate of 75 percent by FY 2xxx, etc.). The goals must be clearly measurable investment outcomes, and if applicable, investment outputs. They do not include the completion date of the module, milestones, or investment, or general goals, such as, significant, better, improved that do not have a quantitative or qualitative measure.

Agencies must use the following table to report performance goals and measures for the major investment and use the Federal Enterprise Architecture (FEA) Performance Reference Model (PRM). Map all Measurement Indicators to the corresponding "Measurement Area" and "Measurement Grouping" identified in the PRM. There should be at least one Measurement Indicator for each of the four different Measurement Areas (for each fiscal year). The PRM is available at www.egov.gov. The table can be extended to include performance measures for years beyond the next President's Budget.

Performance Information Table

Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Category	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
2009	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Mission and Business Results	Defense and National Security	Operational Defense				
2009	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Processes and Activities	Productivity	Efficiency				
2009	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more	Technology	Efficiency	Load levels				

Performance Information Table

Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Category	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
	responsive to the threats of the 21st Century.							
2009	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Technology	Reliability and Availability	Availability				
2010	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Customer Results	Service Accessibility	Access				
2010	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Mission and Business Results	Defense and National Security	Operational Defense				
2010	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Processes and Activities	Productivity	Efficiency				
2010	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Technology	Reliability and Availability	Availability				
2011	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Customer Results	Service Accessibility	Access				
2011	GOAL 2.1 Nuclear Deterrent	Mission and Business Results	Defense and National Security	Operational Defense				

Performance Information Table

Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Category	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
	Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.							
2011	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Processes and Activities	Productivity	Efficiency				
2011	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Technology	Reliability and Availability	Availability				
2012	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Customer Results	Timeliness and Responsiveness	Response Time				
2012	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Mission and Business Results	Defense and National Security	Operational Defense				
2012	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Processes and Activities	Productivity	Efficiency				
2012	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to	Technology	Efficiency	Load levels				

Performance Information Table								
Fiscal Year	**Strategic Goal(s) Supported**	**Measurement Area**	**Measurement Category**	**Measurement Grouping**	**Measurement Indicator**	**Baseline**	**Target**	**Actual Results**
	the threats of the 21st Century.							
2012	GOAL 2.1 Nuclear Deterrent Transform the Nation s nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Technology	Reliability and Availability	Availability				

Section E: Security and Privacy (IT Capital Assets only)

In order to successfully address this area of the business case, each question below must be answered at the system/application level, not at a program or agency level. Systems supporting this investment on the planning and operational systems security tables should match the systems on the privacy table below. Systems on the Operational Security Table must be included on your agency FISMA system inventory and should be easily referenced in the inventory (i.e., should use the same name or identifier).

For existing Mixed-Life Cycle investments where enhancement, development, and/or modernization is planned, include the investment in both the "Systems in Planning" table (Table 3) and the "Operational Systems" table (Table 4). Systems which are already operational, but have enhancement, development, and/or modernization activity, should be included in both Table 3 and Table 4. Table 3 should reflect the planned date for the system changes to be complete and operational, and the planned date for the associated C&A update. Table 4 should reflect the current status of the requirements listed. In this context, information contained within Table 3 should characterize what updates to testing and documentation will occur before implementing the enhancements; and Table 4 should characterize the current state of the materials associated with the existing system.

All systems listed in the two security tables should be identified in the privacy table. The list of systems in the "Name of System" column of the privacy table (Table 8) should match the systems listed in columns titled "Name of System" in the security tables (Tables 3 and 4). For the Privacy table, it is possible that there may not be a one-to-one ratio between the list of systems and the related privacy documents. For example, one PIA could cover multiple systems. If this is the case, a working link to the PIA may be listed in column (d) of the privacy table more than once (for each system covered by the PIA).

The questions asking whether there is a PIA which covers the system and whether a SORN is required for the system are discrete from the narrative fields. The narrative column provides an opportunity for free text explanation why a working link is not provided. For example, a SORN may be required for the system, but the system is not yet operational. In this circumstance, answer "yes" for column (e) and in the narrative in column (f), explain that because the system is not operational the SORN is not yet required to be published.

Please respond to the questions below and verify the system owner took the following actions:

1. Have the IT security costs for the system(s) been identified and integrated into the overall costs of the investment?:

a. If "yes," provide the "Percentage IT Security" for the budget year:

2. Is identifying and assessing security and privacy risks a part of the overall risk management effort for each system supporting or part of this investment?

3. Systems in Planning and Undergoing Enhancement(s), Development, and/or Modernization - Security Table(s):			
Name of System	**Agency/ or Contractor Operated System?**	**Planned Operational Date**	**Date of Planned C&A update (for existing mixed life cycle systems) or Planned Completion Date (for new systems)**
NNSA ASC LLNL Dawn (Sequoia Initial Delivery System)			
NNSA ASC LLNL Sequoia Platform			

4. Operational Systems - Security Table:							
Name of System	**Agency/ or Contractor Operated System?**	**NIST FIPS 199 Risk Impact level (High, Moderate, Low)**	**Has C&A been Completed, using NIST 800-37? (Y/N)**	**Date Completed: C&A**	**What standards were used for the Security Controls tests? (FIPS 200/NIST 800-53, Other, N/A)**	**Date Completed: Security Control Testing**	**Date the contingency plan tested**

5. Have any weaknesses, not yet remediated, related to any of the systems part of or supporting this investment been identified by the agency or IG?

a. If "yes," have those weaknesses been incorporated into the agency's plan of action and milestone process?

6. Indicate whether an increase in IT security funding is requested to remediate IT security weaknesses?

a. If "yes," specify the amount, provide a general description of the weakness, and explain how the funding request will remediate the weakness.

7. How are contractor security procedures monitored, verified, and validated by the agency for the contractor systems above?

Contractor security procedures will be monitored, verified and validated by a comprehensive set of controls.

8. Planning & Operational Systems - Privacy Table:

(a) Name of System	(b) Is this a new system? (Y/N)	(c) Is there at least one Privacy Impact Assessment (PIA) which covers this system? (Y/N)	(d) Internet Link or Explanation	(e) Is a System of Records Notice (SORN) required for this system? (Y/N)	(f) Internet Link or Explanation
NNSA ASC LLNL Dawn (Sequoia Initial Delivery System)	Yes	No	No, because the system does not contain, process, or transmit personal identifying information.	No	No, because the system is not a Privacy Act system of records.
NNSA ASC LLNL Sequoia Platform	Yes	No	No, because the system does not contain, process, or transmit personal identifying information.	No	No, because the system is not a Privacy Act system of records.

Details for Text Options:
Column (d): If yes to (c), provide the link(s) to the publicly posted PIA(s) with which this system is associated. If no to (c), provide an explanation why the PIA has not been publicly posted or why the PIA has not been conducted.

Column (f): If yes to (e), provide the link(s) to where the current and up to date SORN(s) is published in the federal register. If no to (e), provide an explanation why the SORN has not been published or why there isn't a current and up to date SORN.

Note: Working links must be provided to specific documents not general privacy websites. Non-working links will be considered as a blank field.

Section F: Enterprise Architecture (EA) (IT Capital Assets only)

In order to successfully address this area of the capital asset plan and business case, the investment must be included in the agency's EA and Capital Planning and Investment Control (CPIC) process and mapped to and supporting the FEA. The business case must demonstrate the relationship between the investment and the business, performance, data, services, application, and technology layers of the agency's EA.

1. Is this investment included in your agency's target enterprise architecture?	Yes
a. If "no," please explain why?	
2. Is this investment included in the agency's EA Transition Strategy?	Yes
a. If "yes," provide the investment name as identified in the Transition Strategy provided in the agency's most recent annual EA Assessment.	Defense and National Security
b. If "no," please explain why?	
3. Is this investment identified in a completed and approved segment architecture?	No
a. If "yes," provide the six digit code corresponding to the agency segment architecture. The segment architecture codes are maintained by the agency Chief Architect. For detailed guidance regarding segment architecture codes, please refer to http://www.egov.gov.	110-000

4. Service Component Reference Model (SRM) Table:
Identify the service components funded by this major IT investment (e.g., knowledge management, content management, customer relationship management, etc.). Provide this information in the format of the following table. For detailed guidance regarding components, please refer to http://www.egov.gov.

Agency Component Name	Agency Component Description	FEA SRM Service Domain	FEA SRM Service Type	FEA SRM Component (a)	Service Component Reused Name (b)	Service Component Reused UPI (b)	Internal or External Reuse? (c)	BY Funding Percentage (d)
Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data	Business Analytical Services	Knowledge Discovery	Modeling			No Reuse	20
Simulation	Utilize models to mimic real-world processes	Business Analytical Services	Knowledge Discovery	Simulation			No Reuse	80

a. Use existing SRM Components or identify as "NEW". A "NEW" component is one not already identified as a service component in the FEA SRM.

b. A reused component is one being funded by another investment, but being used by this investment. Rather than answer yes or no, identify the reused service component funded by the other investment and identify the other investment using the Unique Project Identifier (UPI) code from the OMB Ex 300 or Ex 53 submission.

c. 'Internal' reuse is within an agency. For example, one agency within a department is reusing a service component provided by another agency within the same department. 'External' reuse is one agency within a department reusing a service component provided by another agency in another department. A good example of this is an E-Gov initiative service being reused by multiple organizations across the federal government.

d. Please provide the percentage of the BY requested funding amount used for each service component listed in the table. If external, provide the percentage of the BY requested funding amount transferred to another agency to pay for the service. The percentages in the column can, but are not required to, add up to 100%.

5. Technical Reference Model (TRM) Table:
To demonstrate how this major IT investment aligns with the FEA Technical Reference Model (TRM), please list the Service Areas, Categories, Standards, and Service Specifications supporting this IT investment.

FEA SRM Component (a)	FEA TRM Service Area	FEA TRM Service Category	FEA TRM Service Standard	Service Specification (b) (i.e., vendor and product name)
Modeling	Component Framework	Data Management	Reporting and Analysis	
Simulation	Component Framework	Data Management	Reporting and Analysis	
Modeling	Service Platform and Infrastructure	Hardware / Infrastructure	Servers / Computers	
Simulation	Service Platform and Infrastructure	Hardware / Infrastructure	Servers / Computers	
Modeling	Service Platform and Infrastructure	Software Engineering	Modeling	

a. Service Components identified in the previous question should be entered in this column. Please enter multiple rows for FEA SRM Components supported by multiple TRM Service Specifications

b. In the Service Specification field, agencies should provide information on the specified technical standard or vendor product mapped to the FEA TRM Service Standard, including model or version numbers, as appropriate.

6. Will the application leverage existing components and/or applications across the Government (i.e., USA.gov, Pay.Gov, etc)? No

a. If "yes," please describe.

Exhibit 300: Part II: Planning, Acquisition and Performance Information

Section A: Alternatives Analysis (All Capital Assets)

Part II should be completed only for investments identified as "Planning" or "Full Acquisition," or "Mixed Life-Cycle" investments in response to Question 6 in Part I, Section A above.

In selecting the best capital asset, you should identify and consider at least three viable alternatives, in addition to the current baseline, i.e., the status quo. Use OMB Circular A-94 for all investments and the Clinger Cohen Act of 1996 for IT investments to determine the criteria you should use in your Benefit/Cost Analysis.

1. Did you conduct an alternatives analysis for this project? Yes

a. If "yes," provide the date the analysis was completed? 2/24/2008

b. If "no," what is the anticipated date this analysis will be completed?

c. If no analysis is planned, please briefly explain why:

2. Alternative Analysis Results: * Costs in millions

Use the results of your alternatives analysis to complete the following table:

Alternative Analyzed	Description of Alternative	Risk Adjusted Lifecycle Costs estimate	Risk Adjusted Lifecycle Benefits estimate

3. Which alternative was selected by the Agency's Executive/Investment Committee and why was it chosen?

Option 2 was selected. Based on the ASC Roadmap and ASC Platform Strategy documents, an appropriate balance of capability, capacity, and advanced architecture computing resources is required, using a strategic investment philosophy at acceptable cost. A Sequoia production uncertainty quantification (UQ) platform represents a combination of these approaches, and incorporates aspects of capability and capacity, and to a lesser extent the potential of leveraging advanced architectures. However, the overall intent is to deploy a production computing resource appropriate for programmatic needs and capable of supporting a wide range of UQ and knob elimination requirements. Without such capability platforms, codes would atrophy and their uncertainty bars will be significantly larger, to compensate for the lack of detail in convergence studies.

Problems at the high-end of the computational spectrum have been a principal driver for the ASC program and are steadily moving toward exascale computing capability by 2020. Advances in fidelity of the physics and the accuracy of the numerical methods, and therefore our confidence in predictions of weapons system performance, are dependent on the level of computing that can be brought to bear. The proposed Sequoia system in 2011 is necessary to specifically address UQ and knob-reduction compute-intensive problems.

a. What year will the investment breakeven? (Specifically, when the budgeted costs savings exceed the cumulative costs.) 2012

4. What specific qualitative benefits will be realized?

NNSA Advanced Simulation and Computing (ASC) computational resources are essential to enable nuclear weapon scientists to fulfill stockpile stewardship requirements through simulation science in lieu of underground testing.

Problems at the highest end of this computational spectrum have been, and will continue to be, a principal driver for the ASC program as highly predictive codes are developed (as outlined in the ASC Roadmap and the evolving Predictive Capability Framework) between 2008 and 2020.

5. Federal Quantitative Benefits

What specific quantitative benefits will be realized (using current dollars) Use the results of your alternatives analysis to complete the following table:

	Budgeted Cost Savings	Cost Avoidance	Justification for Budgeted Cost Savings	Justification for Budgeted Cost Avoidance
PY - 1 2007 & Prior				
PY 2008			No data is available on Budgeted Cost Savings because each new generation supercomputer picks up and continues the resolution of scientific codes and calculations where the preceeding generation's supercomputer left off. ie: increased supercomputer capability is needed in order to progress to the next scientific	

5. Federal Quantitative Benefits
What specific quantitative benefits will be realized (using current dollars) Use the results of your alternatives analysis to complete the following table:

	Budgeted Cost Savings	Cost Avoidance	Justification for Budgeted Cost Savings	Justification for Budgeted Cost Avoidance
			level in meeting agency mission needs/goals.	
CY 2009			No data is available on Budgeted Cost Savings because each new generation supercomputer picks up and continues the resolution of scientific codes and calculations where the preceeding generation's supercomputer left off. ie: increased supercomputer capability is needed in order to progress to the next scientific level in meeting agency mission needs/goals.	Based on benchmark analysis of legacy system performance to plan forecast of future system performance, cost avoidance due to energy efficiency is estimated. When specification of the supercomputer is made energy consumption is one of the operational constraints. Another constraint would be footprint. For this year a 50% cost avoidance due to energy efficiency is forecast.
BY 2010			No data is available on Budgeted Cost Savings because each new generation supercomputer picks up and continues the resolution of scientific codes and calculations where the preceeding generation's supercomputer left off. ie: increased supercomputer capability is needed in order to progress to the next scientific level in meeting agency mission needs/goals.	Based on benchmark analysis of legacy system performance to plan forecast of future system performance, cost avoidance due to energy efficiency is estimated. When specification of the supercomputer is made energy consumption is one of the operational constraints. Another constraint would be footprint.
BY + 1 2011			No data is available on Budgeted Cost Savings because each new generation supercomputer picks up and continues the resolution of scientific codes and calculations where the preceeding generation's supercomputer left off. ie: increased supercomputer capability is needed in order to progress to the next scientific level in meeting agency mission needs/goals.	Based on benchmark analysis of legacy system performance to plan forecast of future system performance, cost avoidance due to energy efficiency is estimated. When specification of the supercomputer is made energy consumption is one of the operational constraints. Another constraint would be footprint.
BY + 2 2012			No data is available on Budgeted Cost Savings because each new generation supercomputer picks up and continues the resolution of scientific codes and calculations where the preceeding generation's supercomputer left off. ie: increased supercomputer capability is needed in order to progress to the next scientific level in meeting agency mission needs/goals.	Based on benchmark analysis of legacy system performance to plan forecast of future system performance, cost avoidance due to energy efficiency is estimated. When specification of the supercomputer is made energy consumption is one of the operational constraints. Another constraint would be footprint.
BY + 3 2013			N/A	N/A
BY + 4 2014 & Beyond				
Total LCC Benefit			LCC = Life-cycle Cost	

6. Will the selected alternative replace a legacy system in-part or in-whole? No

a. If "yes," are the migration costs associated with the migration to the selected alternative included in this investment, the legacy investment, or in a separate migration investment?

b. If "yes," please provide the following information:

5b. List of Legacy Investment or Systems

Name of the Legacy Investment of Systems	UPI if available	Date of the System Retirement

Section B: Risk Management (All Capital Assets)

You should have performed a risk assessment during the early planning and initial concept phase of this investment's life-cycle, developed a risk-adjusted life-cycle cost estimate and a plan to eliminate, mitigate or manage risk, and be actively managing risk throughout the investment's life-cycle.

1. Does the investment have a Risk Management Plan?	Yes
a. If "yes," what is the date of the plan?	2/24/2008
b. Has the Risk Management Plan been significantly changed since last year's submission to OMB?	No

c. If "yes," describe any significant changes:

2. If there currently is no plan, will a plan be developed?

a. If "yes," what is the planned completion date?

b. If "no," what is the strategy for managing the risks?

3. Briefly describe how investment risks are reflected in the life cycle cost estimate and investment schedule:

The Sequoia Risk Management Plan categorizing specific risks, their impact, probability of occurrence and mitigation strategies has been outlined in CD1 and is being developed in more detail in CD2/3. Risk identification and mitigation will be integral to this project, and as such, the Sequoia IPT will continually review critical performance measures and evaluate future technologies in an effort to fine-tune the final implementation architectural design.

The system requirements for this project's ID and final acquisitions are unprecedented in terms of capability. Challenges will not only be technical, but will also manifest themselves in the management and administration of the project. All of these challenges have substantial impact regarding risk and therefore can affect probability of the project's success. The experience gained through installation of other ASC systems such as White, Purple and BlueGene/L have demonstrated that such activities tax the resources and management capabilities of even the largest and best-managed organizations. LLNL has a successful track record deploying complex computing environments. Some of the risk management lessons learned fielding and integrating previous systems into a usable scientific simulation environment include the areas of partnership, research & development, programming models, technology change, component availability, manufacturing and planning, staging and testing, installation, acceptance, stabilization and maintenance.

Section C: Cost and Schedule Performance (All Capital Assets)

EVM is required only on DME portions of investments. For mixed lifecycle investments, O&M milestones should still be included in the table (Comparison of Initial Baseline and Current Approved Baseline). This table should accurately reflect the milestones in the initial baseline, as well as milestones in the current baseline.

1. Does the earned value management system meet the criteria in ANSI/EIA Standard-748?	No
2. Is the CV% or SV% greater than +/- 10%? (CV%= CV/EV x 100; SV%= SV/PV x 100)	No

a. If "yes," was it the CV or SV or both?

b. If "yes," explain the causes of the variance:

c. If "yes," describe the corrective actions:

3. Has the investment re-baselined during the past fiscal year?	No

a. If "yes," when was it approved by the agency head?

4. Comparison of Initial Baseline and Current Approved Baseline

Complete the following table to compare actual performance against the current performance baseline and to the initial performance baseline. In the Current Baseline section, for all milestones listed, you should provide both the baseline and actual completion dates (e.g., "03/23/2003"/ "04/28/2004") and the baseline and actual total costs (in $ Millions). In the event that a milestone is not found in both the initial and current baseline, leave the associated cells blank. Note that the 'Description of Milestone' and 'Percent Complete' fields are required. Indicate '0' for any milestone no longer active.

Milestone Number	Description of Milestone	Initial Baseline		Current Baseline				Current Baseline Variance		Percent Complete
		Planned Completion Date (mm/dd/yyyy)	Total Cost ($M) Estimated	Completion Date (mm/dd/yyyy)		Total Cost ($M)		Schedule (# days)	Cost ($M)	
				Planned	Actual	Planned	Actual			
1	Full-Term Sequoia Plan of Record	3/31/2009	$2.000000	3/31/2009		$2.000000	$0.500000		$0.000000	25%
2	CY09 Plan and Review	4/30/2009	$2.000000	4/30/2009		$2.000000	$0.500000		$0.000000	25%
3	Dawn Phase 1 Build	4/30/2009	$9.000000	4/30/2009	1/23/2009	$9.000000	$9.000000	97	$0.000000	100%
4	Dawn Phase 2 Build	5/29/2009	$10.000000	5/29/2009	2/20/2009	$10.000000	$10.000000	98	$0.000000	100%
5	Dawn System Acceptance	5/29/2009	$18.393303	5/29/2009		$18.393303				0%
6	CY10 Plan and Review	2/1/2010	$2.000000	2/1/2010		$2.000000				0%
7	CY11 Plan and Review	1/31/2011	$2.000000	1/31/2011		$2.000000				0%
8	Early Sequoia Software Functionality	11/6/2009	$4.000000	11/6/2009		$4.000000				0%
9	Sequoia Prototype Technical Checkpoint	12/30/2010	$11.500000	12/30/2010		$11.500000				0%
10	Sequoia Phase 3A System Build	3/5/2012	$2.000000	3/5/2012		$2.000000				0%
11	Sequoia Phase 1 System Build	11/16/2011	$5.000000	11/16/2011		$5.000000				0%
12	Sequoia Phase 1 Delivery	1/4/2012	$6.000000	1/4/2012		$6.000000				0%
13	Sequoia Phase 2 System Build	11/16/2011	$7.000000	11/16/2011		$7.000000				0%
14	Sequoia Phase 2 Delivery and Acceptance	2/27/2012	$25.000000	2/27/2012		$25.000000				0%
15	Sequoia Phase 3B Build	2/22/2012	$27.500000	2/22/2012		$27.500000				0%
16	Sequoia System AcceptanceSequoia System Acceptance	5/14/2012	$48.268558	5/14/2012		$48.268558				0%
17	Vendor D&E Vendor Hardware	12/17/2010	$7.300000	12/17/2010		$7.300000	$0.383750		$0.000230	5.26%
18	Vendor D&E Vendor Software	10/7/2010	$2.971000	10/7/2010		$2.971000	$0.055500		$0.000058	1.87%
19	Vendor D&E Vendor Scaling Milestone	12/9/2010	$1.729000	12/9/2010		$1.729000				0%
20	I/O Infrastructure D&E Phase 1	10/6/2009	$2.000000	10/6/2009		$2.000000				0%
21	I/O Infrastructure D&E Phase 2	10/12/2010	$1.000000	10/12/2010		$1.000000				0%

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Milestone Number	Description of Milestone	Initial Baseline		Current Baseline				Current Baseline Variance		Percent Complete
		Planned Completion Date (mm/dd/yyyy)	Total Cost ($M) Estimated	Completion Date (mm/dd/yyyy)		Total Cost ($M)		Schedule (# days)	Cost ($M)	
				Planned	Actual	Planned	Actual			
22	I/O Infrastructure (Global File System)	9/30/2011	$20.500000	9/30/2011		$20.500000				0%
23	Federal Management & Oversight	9/30/2009	$0.031827	9/30/2009		$0.031827	$0.006712		-$0.005948	2.4%
24	Federal Management & Oversight	9/30/2010	$0.042436	9/30/2010		$0.042436				0%
25	Federal Management & Oversight	9/30/2011	$0.042436	9/30/2011		$0.042436				0%
26	Federal Management & Oversight	9/30/2012	$0.053045	9/30/2012		$0.053045				0%
Project Totals		**9/30/2012**	**$217.331605**	**9/30/2012**	**2/20/2009**	**$217.331605**	**$20.445962**	**1318**	**$0.004942**	**9.41%**